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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,202	12/18/2001	Patrick Lailly	612.40916X00	7978

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EXAMINER	
PALADINI, ALBERT WILLIAM	
ART UNIT	**PAPER NUMBER**
2125	

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,202	LAILLY ET AL.	
	Examiner	Art Unit	
	Albert W Paladini	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-13 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 315/02.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The description of "Demigration of an event" from page 10 to page 17 includes cylindrical waves, reflections, elements such as receivers, vectors, vector equations and geometric parameters of a Cartesian coordinate system such as slope and abscissa. Cylindrical waves and vectors and vector equations are discussed. The relationships between these elements are not understood. A figure, which depicts the elements, the path of the cylindrical wave, the slope, abscissa, and source points would clarify the geometric space and the relationship between the elements. It is necessary to show the origin of the cylindrical wave, and its propagation in a path with respect to the implied coordinate system. As explained, the geometric relationship between the elements and the positions of the elements in the implied coordinate system is not understandable, and the origin and path of the cylindrical wave relative to the elements and the coordinate system is not understandable.

Line 22 on page 10 to line 1 on page 11 states "the ray starting from the receiver and reflecting on the picked event". There is no description of the location of the receiver, and the phrase "reflecting on a picked event" is not understandable. Assuming that the ray represents the cylindrical wave, it must reflect off an object. An event is an occurrence or happening.

Lines 4-5 on page 11 state "Thus worded, the problem appears to be the solution of a non-linear equation (expressing the condition on the slowness vector) in a single unknown". The equation and the relevant variables are not provided. The phrase "expressing the condition on the slowness vector" is not understandable. What condition is expressed on a vector and how is it expressed.

The development of the equations commencing on page 13 is not understandable, since the coordinate system and travel within the coordinate system is not described.

Appropriate correction and clarification is required.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

Claim 1

Steps a through c recite the travel of a vector relative to a coordinate system. The steps describing the coordinates system which contain the recited elements such as the "source point" "abscissa", "slowness vector" are not recited in the claim.

Claim 2

Steps a through c recite the travel of a vector relative to a coordinate system. The steps describing the coordinates system which contain the recited elements such as the "source point" "abscissa", "slowness vector" are not recited in the claim.

Appropriate correction and clarification are required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller (5737220).

This rejection is made to the extent that the claims are understood by considering the recited objectives and the elements, which are consistent with the objectives.

Miller discloses a method of determining earth elastic parameters, and specifically in step 17 of figure 1, Miller teaches a method of determining horizontal and using vertical seismic profile data to determine vertical slowness and travel time.

7. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by de Hoop (5852588).

This rejection is made to the extent that the claims are understood by considering the recited objectives and the elements, which are consistent with the objectives.

De Hoop discloses a method of processing seismic data and the functions used in steps 15 through 17 in figure 3-use anisotropic ray theory to find travel times and curvatures of wave fronts.

Relevant Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sayers (6076275) teaches the use of ray-tracing to estimate travel times, and discloses a method for using S-waves to analyze seismic data and after obtaining an initial isotropic P and S velocity model uses ray tracing to identify PSV waves by looking for events in the prestack data that have similar travel times to those predicted using ray-tracing.

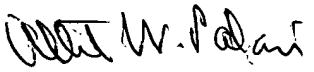
Finn (6446007) discloses a method for estimating the seismic travel time from a subsurface reflection point to a receiver using 3D Fourier data transformed from the space-time domain to a numerically viable alternate domain.

Bloor (6418379) discloses a method for compensating for irregular spatial sampling in seismic exploration by considering a seismic trace with a fixed source and receiver fixed at the surface, considering a curve of constant source to receiver travel time, and calculating a ray path from a shotpoint on the surface of the earth that after reflection from a reflection point in the subsurface reaches the receiver position. The migration operator is a curve (surface in three dimensions) that is the locus of all such paths. This is also a curve (surface) of constant source-receiver travel time. The Kirchoff migrated output at an output location is obtained by integrating the contributions from all possible shot and receiver combinations. In a spatially sampled domain, summing over a finite number of shot and receiver pairs approximates this integral.

9. Any inquiry concerning this communication or earlier communication from the examiner should be direct to Albert W. Paladini whose telephone number is (571) 272-3748. The examiner can normally be reached from 7:00 to 3:00 PM on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo P. Picard, can be reached on (571) 272-3749. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Albert W. Paladini
Primary Examiner
Art Unit 2125

March 10, 2005